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AUTHOR	Rathbun, Gail A.
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ABSTRACT

This study tested the usefulness of an activity-oriented approach in describing and explaining the work of designing an international distance education course in business entrepreneurship at Indiana University. The course was team taught with an instructor at the City University of Hong Kong; video conferencing and Internet-based technologies were used to facilitate collaboration. Data were collected through observation, interviews, and document review. Multi-faceted views of the object/outcomes of work emerged, which led to both breakdowns in the processes of the work activity and to innovation and modification. The sets of assumptions embraced by the communities of practice to which participants belonged strongly influenced what each individual considered correct and appropriate behavior. Concrete, empathetic ways of doing, guided by an ethic of care, emerged as the more influential forces in gaining knowledge and guiding action in this case. The researcher suggests that accepting these forces as the set of assumptions underlying design practice creates new potential for re-shaping and renewing the practice of instructional design, its research agendas, and design education. Major topics covered include: four activity systems and their underlying contradictions; analysis from a historical perspective; and implications for practice, research, and design education. (Contains 34 references.) (MES)

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Portraying the Work of Instructional Designing: An Activity-Oriented Analysis

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By:

Gail A. Rathbun

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PORTRAYING THE WORK OF INSTRUCTIONAL DESIGNING: AN ACTIVITY-ORIENTED ANALYSIS

Gail A. Rathbun
Indiana University, Bloomington

Research on the practice of instructional designing has taken a variety of forms, from the elaboration of process models to retrospective case studies. Seldom has the research provided portrayals of design work as it happens, nor has it integrated in a coherent way the interaction of social, cultural, and historical influences on the way the work unfolds. Activity theory, based on the work of Vygotsky and Leont'ev, has provided researchers in fields as varied as software design, teaching, and organizational analysis with a way of studying work that integrates context and the factors mediating action into a representation of human activity. This study tested the usefulness of an activity-oriented approach in describing and explaining the work of designing an international distance education course in business entrepreneurship at Indiana University. Multi-faceted views of the object/outcomes of work emerged, which led to both breakdowns in the processes of the work activity and to innovation and modification. The sets of assumptions embraced by the communities of practice to which participants belonged strongly influenced what each individual considered correct and appropriate behavior. Concrete, empathetic ways of doing guided by an ethic of care emerged as the more influential forces in gaining knowledge and guiding action in this case. The researcher suggests that accepting these forces as the set of assumptions underlying design practice creates new potential for re-shaping and renewing the practice of instructional design, its research agendas, and design education.

Activity theory

The focus of activity theory, as elaborated by Leont'ev (1981) is on the objects of human activity–both as products of activity and as mediators of it. This theoretical view emphasizes the transitional and multifaceted nature of the objects of activity, the key role of perspectives in understanding human activity, and an activity's situatedness within a cultural and historical context. An activity-oriented analysis emphasizes a view of process as primarily a set of ongoing negotiations and relationships. These interactions, which are often evident as disturbances or communications "glitches," spur creativity, innovation, effort, and conflict, which, in turn, move work activity to another "state of being." Letting disturbances guide data collection and analysis has great potential to show how new activity structures evolve, not solely through individual action but through collective action. Another principle of an activity-oriented analysis is the adoption of a historical perspective in the interpretation of the observed disturbances and underlying contradictions. In this study, I adopted a developmental view of the practice of instructional design consulting as it has evolved since the 1930s. By regarding the community of practice of instructional designers as an evolving "place" of development, design paradigms may be viewed in a new way. Instead of viewing them as oppositional poles (e.g., either viewing design as procedural and linear, based on a "normal" view of science; *or* as intuitive and purely empirical), they can be viewed as factors necessary to the development of design as a work activity. By using activity theory as a framework for studying design work, context and the dynamic interactions that drive the design process forward are in the foreground of the depiction of work activity and provide the structure for a coherent description.

The Hong Kong Distance Learning Project

The subject of this case study was the design, development and implementation of a distance education component for an existing undergraduate business course in entrepreneurship. The dean of undergraduate studies in the business school had approached the instructor, who had taught the course for at least three previous academic years, with the innovative idea of team-teaching the course with an instructor at the City University of Hong Kong (CUHK). Video conferencing and Internet-based technologies would be used to facilitate collaboration among the students and between the two teachers. Administrators at both schools were very keen on the idea, especially since the planning of the course coincided with publicity about the "handover" of the former Crown Colony to the People's Republic of China. The goals of the Hong Kong Distance Learning Project were to involve students in a cross-cultural learning experience, expose them to and train them in the use of distance learning technologies, develop their capabilities in global and international business, and provide a learning opportunity for IU faculty and staff.

Nearly 30 of the 90 students enrolled in the course volunteered to participate in the distance project. The majority of the US volunteers were freshmen and sophomores, while all of the Hong Kong students were the equivalent of juniors and seniors. The instructor formed ten teams of three US students each, and each team was matched with three of the Hong Kong students. The six-member teams developed business plans together and presented their plans via three video conferences and jointly-constructed web sites. They used chat, e-mail, and Alta Vista Forums as communication and collaboration tools.

In June, when work began on the project, eight people attended the project's initial meeting. In attendance were: the undergraduate dean who had arranged for the project, the US teacher who would act as the project manager, instructional designer, and teacher; the assistant director of instructional technology services in the business school; the business school's instructional consultant who would design and execute an evaluation of the project; an independent instructional technology consultant who had been the teacher's graduate student; a representative of the School of Continuing Studies, which would provide technical assistance and some funding; the business school's director of international programs; and an instructional technology consultant from the Teaching and Learning Technologies Lab (TLTL) who was conducting a campus-wide pilot test of Alta Vista Forums. As the project progressed, the working group became smaller, including only the teacher, the independent consultant, the evaluator, and the instructional technology consultant. The IU teacher communicated directly with the Hong Kong teacher, whom he had met on a trip to Hong Kong in May.

Method

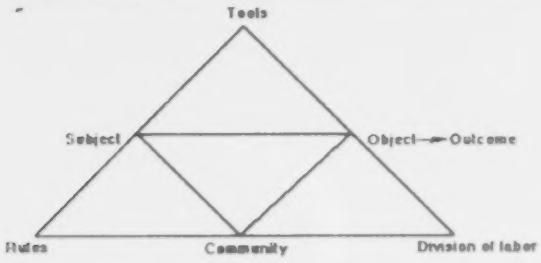
Between June and November I recorded in-person *observations* of work meetings among staff and faculty on audiotape and made transcripts afterward. A set of focusing questions guided my initial observations. In addition to observing work meetings, I observed a rehearsal for the first video conference, a training session for students in the use of a Web-based conferencing system, three video conferences, two American class sessions, and a faculty debriefing of a pilot test of a Web-based conferencing system. I also observed a meeting concerning contract negotiations between the faculty and the School of Continuing Studies. These observations provided background essential to understanding the intent and content of ongoing communications, and the actions of participants as they planned and carried out project work activity.

I conducted individual *interviews* with each participant as soon as our schedules permitted (within 3 to 10 days) after each observation. In some cases, for mutual convenience, at the participant's request, or because of the location of the participant (e.g., Hong Kong), the follow-up interview was conducted via e-mail or telephone. Whenever possible (including e-mail interviews) I used the transcript, notes, and artifacts of the observation to stimulate recall of the observed event. The purpose of the interview was to gain the participant's perspective of the event and the project, to check the accuracy of my observations, and in later interviews, to test my interpretations of events against the participant's own. Before each interview I identified what appeared to be disturbances by marking them in color on the printed transcript. Three types of disturbances quickly emerged as the most frequently occurring: change in thinking, surprise, and misunderstanding/disagreement. I directed the participant to these portions and asked him or her to comment. I asked respondents to make any additional comments they wished, and to point out other disturbances they perceived. I generally followed this procedure in all follow-up interviews.

Document review, particularly of the printouts of e-mail or student conferencing sessions, felt like the posthumous observation of a "live" activity. The distinction between a document and observing an event was thus blurred, but much activity that might otherwise have remained invisible was made visible. When a set of Internet exchanges represented a collaborative work activity that could have taken place face to face, I used the messages as transcripts on which to base brief Internet interviews, again letting perceived disturbances guide my questions.

I coded the disturbance-producing exchanges into six talk types: Advising/Consulting, Delineating/Assigning, Authority/Control, Framing, Technical Talk, and Scenarios (Narratives). The next step was to understand the underlying contradictions in the activity system that led to disturbances. I returned to my analysis of each example, first from the perspective of the Object, then from the perspective of Subject. Using the activity system model developed by Engestrom (1987) (see below) to guide the first levels of analysis, I compared the examples of talk, seeking out fundamental similarities that might help describe and explain underlying contradictions in the activity system. I then used the activity system diagram in writing my conclusions, supported by appropriate research in a variety of fields.

Figure 1. Structure of Human Activity, (Engestrom, 1987)



Definitions of components of activity system

Subject: individual or subgroup whose actions are being analyzed
Object: problem or material receiving the action, and which is molded into an outcome
Rules: norms and conventions, both implicit and explicit that constrain action
Tools: mediating instruments and signs used by subject on object to achieve outcome
Community: multiple individuals and sub-groups sharing same object
Division of labor: horizontal division of tasks and vertical division of power and status

Further analysis of the data from a historical perspective acted as a "cross-examination" of the data using a different framework. I needed a tool that would integrate changes over the years in the way people perceive and arrange design activities with a generic description of what actually happens when two or more people perform design activities together. Finding no suitable pre-existing tool, I developed an analytical tool in the form of a matrix "Analysis of the work activity from a historical perspective." I then re-examined each talk type example and sorted it into an appropriate cell in the table.

Four activity systems and their underlying contradictions

Using the intended outcomes of the work activities I observed, and working back toward the persons or entities (Subjects) involved, I identified four distinct concurrent sets of relationships.

- the activity system of course design/implementation
- the activity system of evaluation
- the activity system of consulting
- the activity system of relationship building

Disturbances occurred in each activity system. I looked beyond the disturbances to first determine the factors (Subject, Object, Outcome, Tools, Rules, Community of practice, Division of Labor; see activity system diagram above for a definition of each factor.) generating the disturbance. I then attempted to pinpoint the underlying contradiction that might have caused the disturbance, and to explain the source of the contradiction. I will highlight in this article three fundamental contradictions that emerged in one or more of the activity systems.

The interplay between technical and practical human interests

Disturbances in the activity systems of course design/implementation and evaluation arose from participants' different perspectives of the Object and Outcome of work, and from the type of knowledge (a mediating Tool) most appropriate to achieving the Outcome. From one perspective the work Object (the course) was a process (e.g., a learning experience). The primary alternate perspective of the work Object was "course as product" (a consumable commodity or well-functioning machine). The primary perspectives of knowledge as a Tool emerged as either a set of facts (e.g., software features or theories) or as a narrative (e.g. hypothetical scenarios of use, narratives of past experiences). Not knowing or not agreeing on which representation of the Object, Outcome, or Tool was appropriate at a given moment caused disturbances. The contradiction behind these disturbance can be expressed as an interplay between a technical human interest and a practical human interest, as described by Habermas (cited in Streibel, 1991) and adapted in recent instructional design research (Grundy, cited in Streibel, 1991; Li and Reigeluth, 1995). These interests represent orientations toward the world, born of individual experience, professional training, membership in an ethnic group, the mores of a society, and so on.

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Table 1: Dispositions in the various types of human interest, from Streibel's adaptation of Grundy (Streibel, 1991)

	Technical interest	Practical interest
Orientation	Controlling self, other, and environment for external purposes	Understanding self, other and environment through interaction
Outcomes	Correct behavior	Meaningful action
Authority residing in	Plan	Practitioner
Forms of Logic	Instrumental logic	Consensual

The technical human interest, represented in this study by the product view of the Outcome and a view of knowledge as a set of facts, implies a way of knowing that is based in empirical study of phenomena and experience for the purpose of prediction and control. In the realm of technical human interest, theories are at first descriptive and subsequently used to predict. Knowledge, represented as facts, laws, procedures, is viewed as an instrument in gaining control over objects, processes, and phenomena.

The practical human interest, represented here by a process view of the work Object and a narrative view of knowledge, implies a way of knowing that is emergent. In the realm of practical human interest, knowledge is experience as expressed in narratives of what has been done or said. This view of knowledge aligns itself with the human condition: humans *have* to find a way to be in the world and knowledge is negotiated in the course of seeking and establishing meaningful interaction with other humans in the world. In the practical human interest, theories that predict and control are viewed as useful insofar as they contribute to the practical goal of coming to terms with one's lived experience.

One of the most striking examples of the conflict and interplay of the technical and practical human interests in this case study was the emergence of two evaluation activity systems. The two co-existed and came into conflict with each other, shaped by different perceptions of the appropriate Object and Outcome of evaluation. Disturbances arose because of 1) differing views of the how the outcomes of the evaluation study would be used, and because of 2) different concepts of the meaning of "evaluation" in the context of teaching and learning.

The business school's instructional consultant designed an evaluation according to the rules of an experimental study, choosing dependent and independent variables and using statistical means in analyzing the data. Faculty and staff expended much effort on the creation and administration of the project evaluation and on accommodating the constraints and the "rules" of an experimental study design, particularly the requirement of randomly selected control and treatment groups. The original course design called for students to volunteer for the Hong Kong project. In return for the extra work this might require, volunteers would not have to take the second exam. Non-volunteers would not work in groups as the Hong Kong students would. The teacher change the design of the course in an attempt to meet the requirements of the experimental design, most significantly by requiring all of the students to work in groups (which doubled his workload), and by deciding to form the experimental groups from the pool of volunteers. The design fell apart when only 20 volunteers came forward. The teacher did not wish to deny 10 students the opportunity to participate in the project for the sake of forming a control group.

The other activity system of evaluation, embedded in course design and delivery, was the evaluation activity implicit in the notion of "pilot study." The teacher's "pilot study," unlike the point of view adopted by the business school's consultant, prescribed neither data collection instruments nor analysis and interpretation methods. It prescribed only a "frame of mind" that permitted experimentation and forgave failure. The Rules guiding action in this embedded evaluation activity required judgment, good will, and a willingness to negotiate meaning and compensation (e.g., no second exam, "easier grading" for the Hong Kong project volunteers) with students. In this view, evaluation was an activity oriented toward practical interests, guiding and guided by the teacher's meaningful action, and employing consensual logic. At the same time, meaningful, defensible, usable results were produced and informally shared among the evaluation team.

The interplay of ethical and moral value systems: Justice, rights, or care?

Because of the large size of the class, only a portion of it was involved in the Hong Kong project. The IU teacher was acutely aware of his institutional obligation to deliver the course described in the catalog and of the scrutiny his experimental, Web-based syllabus and course materials were likely to receive from his colleagues. His anxiety arose from knowing that he would have to make changes in order to maintain fairness among students in the class, to motivate and enable students, and to get them to trust that he knew what he is doing, though he admitted he was "in over his head." But the deeper cause of his anxiety was the competing set of rules that guided the enactment of his contract with students and the university.

One set of rules can be identified as "professional rules of conduct" and the other set might be characterized as what has recently been called an "ethic of care" or a "feminist ethic" (Gilligan, 1982; Noddings, 1984). On the one

hand, a standard professional code of conduct presumes disclosure, diligence, and disinterestedness (Shapiro, cited in Moberg, 1994). Much effort is devoted to evening out inequalities.

On the other hand, Moberg observes that in the feminist model "valued actions can flourish in a climate of inequality" (Moberg, 1994). Within the feminist framework the obligations are to care, enable emotional work, and build authentic trust. Moberg further notes that the professional code strives to mitigate or prevent action, focusing on the work itself, while an ethic of care focuses on relationships between and among work and workers, and provides a basis for acting. The professional code of ethics is inflexible and rigid while an ethic of care appears more fluid and responsive to emerging situations. In this case study an interesting paradox arose. The syllabus was a public and accessible document, emphasizing the organizational obligation, a legal contract, to deliver a product/service, yet the web format allowed changes brought about by the teacher acting on his moral obligation to care for those he had placed in a difficult and potentially unfair situation.

A related set of disturbances arose from accommodating the vantage points of students as consumers and students as "co-developers" and/or "experimental subjects," and the vantage points of teachers as both providers of a service/product and experimenters/test subjects. Accommodating the view of the Subject as a guinea pig with the view of the Subject as either a service provider or consumer stimulated "emotional work" (Hochschild, cited in Moberg, 1994). Because the experimental, uncertain nature of the innovations being tried made teachers, staff, and students vulnerable to harm and threatened the successful completion of the institutional contract between them, many project participants sought to ameliorate harmful effects through responding to personal needs, doing emotional work, and taking trust-building action. In this case study, participants performed emotional work by comforting each other when performance fell short of expectations. For example, the IU teacher commented on the independent consultant's patience and persistence in trying to solve technical problems that arise during the AVF training. Other staff reassured the teacher that the outcome of the project was not unusual for courses incorporating intensive technology use for the first time. The teacher protected and encouraged his "kids" when they had difficulties communicating with CUHK, and when teamwork and goodwill were in scarce supply, coming to their defense when he thought they had been unjustly maligned.

Cultural conditioning of the choice between doing right or doing good

In this case study, how an individual perceived his or her work was connected to his or her identification with a culture or community of practice. In my examination of disturbances occurring within the activity systems of consulting and relationship building I found evidence of participants' acceptance of some implicit, culturally embedded rules which guided their behavior. Culture and community of practice were strong influences when combined with personal styles and personalities, on how individuals interpreted the object and outcome of work activity, decided which tools to select, and what rules of action to follow.

A culturally-defined ethical divide

For example, in the United States, professionals and business people are guided in their work by a traditional code of ethics (Cavanaugh, Moberg, & Velasquez, 1995), which is taught and reinforced in schools, churches, and other social groupings, such that the code becomes an invisible part of the fabric of culture. The Chinese participants in this study, as well, appeared to accept this code as the correct ethical standard to meet. Moberg lists as characteristics of this code:

- Relations between equals
- Emphasis on abstract principles
- Moral agent is detached and rational
- Value on rights and justice
- Unilateral giving as virtuous altruism
- Partiality is suspect

Two participants in particular placed highest value on the "good of the project," and believed that if they stayed within their perceived roles, they could not achieve the highest level of good. At the same time, they were conscious of assuming roles and authority beyond the scope of their publicly acknowledged roles and sought to protect themselves and their clients from any negative effects of their appropriation of tasks and responsibilities. In this case study, participants privately put emotional effort into understanding their relationships to each other and to their work, but at great sacrifice. They tended to privilege duty to "the project" and to their profession, over duty to each other. Doing what was "right" or "correct" often came into conflict with doing what was appropriate to the situation or supportive of trusting relationships. As Moberg points out, writing about ethics in business management (Cavanaugh, Moberg, & Velasquez, 1995), the traditional formulation has long ignored questions of the "moral importance of interpersonal relationships in business."

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When in Rome...?

The community of practice provides a set of shared values, instilled in its members through similar work experiences, "enculturation emanating from theory", or the personality characteristics of people attracted to the field (Seels & Richey, 1994). Lave and Wenger (1991) elaborate:

> A community of practice is a set of relations among persons, activity, and world, over time and in relation with other tangential and overlapping communities of practice. A community of practice is an intrinsic condition for the existence of knowledge, not least because it provides the interpretive support necessary for making sense of its heritage (p. 98).

I identified the following communities of practice in this case study:

- the community of computer technologists
- the community of experimental researchers
- the community of college/university teachers
- the community of "integrators," such as instructional technology consultants
- the community of school administrators, with US and Chinese sub-groups
- the undergraduate business student community, with US and Chinese sub-groups

Participants often tried to use the language of a different community of practice in order to build relationships, learn and understand viewpoints, or share knowledge. The disturbances caused by trying to move in and out of practice communities, each with its own set of rules, models of behavior, and language forms raised difficult questions for the participants, who were mindful of the project's institutional and faculty/staff development objectives. Disturbances occurred from efforts to accommodate or work around the differences in each community's rules in order to accomplish the goals of the project and the institutions involved. For the "cause" of relationship building, participants had to choose between following the rules of their own respective communities of practice and adapting to the rules of other communities, depending on how explicit and public the differences were, and the pain or cost of not adapting.

Analysis from a historical perspective

A developmental view of day-to-day practice allows a researcher to accommodate and explain the change and contradiction that comprise the lived experience of design work. The activity systems described here represent a point in time through which developments prior to their existence resonate. Prior conceptions of work are detected as "traces" or "layers" within the current activity system structure and potentially give rise to disturbances. Below I single out the developmental changes I believe most crucial to understanding the evolution of design work as we know it today: changes in who participates in design work and how it is led; and concurrent changes in the complexity and organization of design work.

Changes in participation in the design process

In the last 30 years there has been increasing acceptance in many design fields of the appropriateness of the involvement of non-designers in design work. Non-designers, such as clients and users, are viewed as not only the owners of a problem and sources of data input, but as active participants in the design and implementation of the solution (Dorsey, Goodrum, & Schwen, 1997; Ehn, 1993; Mitchell, 1990; Schrage, 1995). The concept of "stakeholder" participation, meaning the consultation and involvement of relevant individuals, units, and organizations (or collectivities) during the life of a project, has become widely accepted as a benefit to designing, though frequently ignored in practice (Clancey, 1993; Goodrum, Dorsey, & Schwen, 1993). As a result of the expansion of participation in designing wherein clients, users, and stakeholders are required to play new and unfamiliar roles, professional designers (and most other professionals, for that matter) have had to shift some of their attention from tasks and objectives to the nature and quality of the process engaged to accomplish them (see, for example, Coscarelli & Stonewater, 1979; Davies, 1975; Tovar, Gagnon, & Schmid, 1997). Attention to process includes close examination of interpersonal, inter-organizational, and intercultural relationships (as in Campbell-Bonar & Olson, 1992). As a result, questions arise as to 1)the definition of "expert" and "expertise", connected to the explicit requirement that the professional facilitate, teach, and learn with others; 2) the professional's choice and deployment of tools; and 3) the appropriate and proper criteria or standards for regulating or guiding these relationships (see, for example, Li & Reigeluth, 1995; Wilson, 1995).

Changes in complexity (specialization) of work

For his long-term study of doctor-patient interactions in Espoo Finland Engestrom (1993) chose two of the dimensions identified by organization analyst Perrow (1984): complexity of the work activity and the degree of centralization of control. He arranged types of work activity on a continuum of development, from low specialization

in the organization of work with centralized control, to highly specialized work organization with de-centralized control. Low specialization (low complexity) means that an individual who exerts a high degree of control over assistants (e.g., apprentices) accomplishes all of the processes. An example of a more complex organization of work is the modern industrial factory and bureaucratic offices where the work requires complex interactions and coordination; control is highly centralized in order to maximize efficiency. A hybrid form of craft work and bureaucratized work is "humanized activity" where work remains complex and requires a high level of coordination, but control of the work is decentralized and moves downward in the hierarchy. A fourth category projects a type of work activity where workers are empowered to change the fundamental tasks, goals, products, and values, contradictions of their work. It is a developmental category that may grow out of solutions to difficulties produced by the conflict between the rationalized activity type and humanized activity type.

Historical types in the development of instructional design as a work activity

I identified six possible historical types in the development of instructional design as a work activity based on the complexity of the work and how work is organized (Perrow, 1984). The categories and ranking scheme are made only for clarity in presentation. The practical reality is that within each historical type are characteristics of other types. Here I have tried to highlight the defining characteristics of each historical type. The order of presentation is roughly from work that is the least specialized in its organization, under centralized control, to work that is complex in its organization and under de-centralized control.

Craft activity

Hollywood director Frank Capra's direction of training films in World War II might be a prototypical example. His vision and his artistry are what led the design of these highly successful training interventions. The researcher/experimenter designing audio-visual interventions in this period relied heavily on craftpersons, but also applied his own "craft" of experimental design. Observation, surveys, and interviews were used mainly as evaluative tools after the initial design was complete.

Systematic design

The Dick and Carey (1996) model of instructional development is probably the best known example of the application of systematic process management to instructional design. Systematic design is characterized by formal knowledge elicitation and integration procedures, and emphasizes product efficiency and effectiveness as measures of success. The process is typically viewed as occurring in phases: research (analysis) preceding development of a product, followed by implementation and evaluation.

Usability and "user-centered" design

Usability studies and a user-centered design movement gained momentum in the 1970s and re-focused the design process on the needs, interests, and capabilities of the individual who might use the product. With the advent of authoring software and scripting languages, instructional designers often became software designers, and the language and techniques of usability engineering became part of their practice. Developers invite members of the target user group to test a version of the product before it is completed. The conclusions drawn from early testing are then used to modify the product. Sugar and Boling (1995) observe that the principles and methods of user-centered design roughly correspond to the needs analysis, learner analysis, and formative evaluation stages of the Dick and Carey (1996) model, but that usability evaluations are a novel addition to instructional design processes.

Rapid prototyping (RP)

RP is another technique borrowed from software development. Researchers in the field of instructional design (Tripp & Bichelmeyer, 1991; Dorsey, Goodrum, & Schwen, 1997) have explored rapid prototyping as the foundation of an alternate approach to instructional design. The making of a product serves as a way to both define and solve the problem. Research on needs and objectives proceeds in parallel with the development of the product. A usable product may thus be available much earlier in the process and be used to explore implementation questions. The evolving prototype provides a focus for designer-client communication earlier and more frequently in the design process.

Socio-technical design

The instructional design process is viewed as an activity situated in a changing environment which includes people, technology, and constantly evolving work-practices(Goodrum & Schwen, 1994). Clancey (1993) points out that the socio-technical approach includes views commonly associated with the systematic, but goes beyond them. Highly collaborative instructional design projects such as those reported by Cennamo, Abell, Chung, Campbell, & Hugg (1995), and Grisdale and Campbell-Bonar (1991), are examples of attempts to put the socio-technical view into practice. In both, teachers (the content experts) and designers simultaneously focused on the major tasks of the

design project, and all were actively involved throughout the life of the project. There was a conscious effort on the part of designers and clients alike to enter each other's community of practice.

Emancipatory design

An emancipatory instructional design process is focused on "the uncovering of factors that prohibit and prevent the autonomous actions of learning, instruction, and design respectively (Li & Reigeluth, 1995)." The designer's role is to nurture throughout the design process critical awareness of social and cultural assumptions. The aim is the empowerment of participants to break "old molds" and restructure the learning environment so that ongoing dialogue and critique are encouraged. Students, teachers and designers alike should be enabled to design their own learning. Complete membership in another's environment is integral and fundamental to the emancipatory design approach.

Changes in work activity as indicated by aspects of the designer's deployment of expertise in a group context

The table below provides a brief overview of the historical types in terms of five aspects of any relationship the designer is likely to enter into during the course of instructional design projects:

- the source and nature of the expertise the designer employs (e.g. technical/discipline knowledge, pragmatic, interpersonal);
- who has the responsibility/is accountable for doing the designing (including development, evaluation, and implementation);
- the types of conceptual tools used and when they are used;
- the predominant orientation of designer toward product, process, or context;
- the ethical principles (the "oughts" and "shoulds") guiding the designer's actions at any given moment.

Table 2: Changes in ID work activity as indicated by aspects of the designer's deployment of expertise in a group context

Historical type	Nature of expertise	Focus of responsibility for designing	Tools	Orientation	Ethical Principles guiding designer's actions
Craft activity	artistic, technical	designer	intuition, experience; experimental design principles; holistic evaluation	product	work for hire, produce results contracted for
Usability /User-centered	technical tempered by pragmatic	designer (users are inputs to designer-led process)	qualitative research methods; iterative process model; holistic evaluation	product, process	observe protocols for protecting human subjects; place user needs/wishes first
Rapid prototyping	pragmatic, technical	designer (user involvement to inform designer-led process)	"analysis by doing" (analysis by synthesis`); iterative process model; holistic evaluation	process, product	place user needs/wishes first; suspend commitment, withhold judgment
Socio-technical	interpersonal, pragmatic, technical	shared among designers and stakeholders (including users)	variety of tools (see above); facilitative strategies and tactics	process; context	see all of above
Emancipatory design	interpersonal, pragmatic, technical	shifted to those "designed for"; user's are inputs to their own process	facilitative strategies and tactics	process; context	moral obligation to empower others

E. General observations

Three prominent historical categories

In this case study three historical categories described the majority of the work activity. Those categories were: craft activity, systematic design, and usability. Historical differences in the source and in the nature of the expertise used and in the tools employed in craft activity and systematic design activity created disturbances and required participants to negotiate and invent.

The teacher's previous design and delivery of the entrepreneurship course had been conducted as a craft activity. The teacher was the "honcho" (the Dean's characterization of his general management philosophy) of the course, operating within a bureaucracy that left him alone as long as teaching and learning outcome measures were within acceptable limits. The technology itself and the increased visibility that technology drew to the course required the teacher to acquire and manage a greater variety of resources. With the management requirement and the visibility came accountability, and the need to be more systematic about how the course was to be planned and

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executed. Disturbances therefore arose because of changes in how the work activity had historically been organized (an individually directed craft activity) and because of an increase in its complexity.

At the beginning of the project the teacher had bemoaned his additional role (he was instructional designer and teacher, as well) of "project manager" and the complexity of orchestrating the work of 8 or 9 people. By the end of the project, he was relieved that in reality he worked with far fewer individuals. Concurrently, Bob resisted any attempts at systematizing his design process and his implementation of the course (except for the formal evaluation component). Illustrated here are some classic philosophical notions. One is the romantic notion of the "individual as the source and purveyor of creativity" (Coyne & Snodgrass, 1993), exemplified in the characterization of design as a craft activity carried out using artistic expertise. Another is the equally romantic notion of the individual as rational and objective, rendered so through the use of logical analysis and its tools (e.g., explicit models of reasoning). Underlying these notions is the classical conflict between the belief in rationalism as a route to gaining and using knowledge and the belief in pragmatism as a means to the same ends.

Traces of past and future conceptions of work

Engestrom (1987, 1993) has suggested that the coexistence of various stages of development in a work activity create conflict and potential for further development. The frequency of speaking "scenarios of use" among technologists in this case study might be considered an indication of the influence of the user-centered design movement on the day-to-day practice of instructional technology consulting and instructional design. In some cases the scenarios in this project facilitated hypothetical usability testing. The use of narratives in which students and teachers were the main characters also indicated the relative importance the speaker gave to students and teachers in design activities. The teacher and the TLTL consultant spontaneously generated the most scenarios, consistent with their social and pragmatic orientation toward the object of their work. Although the independent technology consultant was the self-proclaimed champion of the user, he did not seem as successful in creating narratives of use. He approached user-centered design from the "usability engineering" perspective, in which the users are necessary inputs or variables to consider, reflecting a rationalistic orientation.

The methods, practices, and orientations characteristic of the usability stage of development are a bridge to "humanized" stages of the development of instructional design, such as participatory design, and to "emancipatory design." A technical orientation toward usability testing and user-centered design is at this point in time well ensconced in the theory and practice of instructional software design and instructional design training. The flexibility of the scenario or narrative in representing different orientations toward the object of work and its ability to incorporate the salient aspects of people acting in a socio-technical environment make the scenario an important, multi-edged design tool. For example, John Carroll's investigations (Chin, Rosson, & Carroll, 1997; Carroll, 1994) of creating scenarios of use with users early in the design process expands the purpose of the scenario beyond capturing input for designers on functionality and requirements to the co-designing of new work activities. Suchman (1995) pushes the scenario's role in user-centered, participatory design even farther. When scenarios are preserved on videotape, for example, additional propositions arise connected to the user's and the designer's voice, authority, and will. Suchman suggests:

> - ...the aim of representing work is to provide workers/users with a richer presence or stronger voice in sites of professional design;
> - representation involves the artful crafting of people's stories;
> - workers' perspectives are made available, present through representations, they speak in their own voices;
> - representations may become resources for workers' own use in negotiations with management; and
> - representations work against automation based on simplified notions of work. (p.60)

The concepts of usability and user-centered design, expressed through the scenario of use, or user- and designer-created narratives, can be viewed as a bridge from previous developmental forms of design work activity, such as craft and rationalized work forms, to humanized and emancipatory forms. In this case study, the teacher most frequently made statements that exhibited the pragmatic and social characteristics of historical types in the lower part of the matrix. The teacher could be seen, by setting an example, as leading the way across the bridge. Had participants been more conscious of the role that narrative could play in their development work, the bridge might have been crossed.

None of these points reveal anything new about our knowledge of people engaged in design process, or the way that teachers work when designing and delivering courses. However, the matrix provides a different vantage point and a way of articulating knowledge about this case of instructional design that puts what we know in a context--a historical one--that is not frequently examined in case studies of this kind.

VI. Implications for practice, research, and design education

The findings and conclusions of this case study have implications for instructional design practice, the conduct and presentation of research on design practice, and design education.

Implications for practice

The method and research perspective used in this study provide simultaneously a diagnosis of what is wrong and a suggestion as to what to do. In this study I observed how people work through the disturbances and deal with the systemic contradictions underlying them. I saw potentials for future development of the work activity of instructional design emerge from the people performing the activity in context. Future development of instructional design as a work activity would be affected by acknowledgement of:

- the importance of "designing the designing", in part by coming to know the cultural rules, tools and goals of collaborators and other participants, and by understanding the communicative quality of one's choice of rules, tools, and goals;
- the pre-eminent importance of an ethic of care in the design and implementation of instruction;
- the importance of being able to understand and use narrative in instructional design work;

Implications for research on practice

I have demonstrated that a coherent account of practice can be constructed which includes and focuses on social, cultural, and historical factors. Using the nodes of the activity system model I still risked shattering the experience into a million pieces. Two key factors acted as the "glue" to keep the analysis whole: the focus of the analysis on interaction of the Subject with the Object and its Outcome, and the analysis was guided by disturbances, which are evidence of interaction.

The historical analysis presented here suggests a way of tracking the influences of the historical development of the practice of instructional design on day to day design work. An historical analysis allows the practitioner to understand that the values and assumptions of a community of practice arise from the accumulated experience over time of individuals accommodating contradictions, and therefore that they are constantly in a state of change. Such a view of one's role in the community and the role of community in one's work engenders, I believe, a greater acceptance of conflict and change in one's immediate experience, and provides an impetus toward greater flexibility in the application of methods and techniques. Such an attitude is important to inculcate in future practitioners if instructional design field is to have future viability.

Implications for design education

The activity system model provides an alternative model of design process that incorporates the social factors without the usual "mess" and without isolating them in order to deal with them. It is a model that can accommodate the variety of perspectives instructional design researchers write about, and most importantly, can represent and help resolve the tensions that practitioners experience in their everyday work. An understanding of instructional design work built around a more inclusive, more richly explanatory model is important in representing instructional design work to those who work with instructional designers (e.g. clients, content experts, teachers). It is important in the education of new designers, whose most earnest questions often have to do with *how* to do this work with others in real contexts.

Lastly, and most importantly, the education of future instructional designers must be more fully and explicitly understood as acculturation because the values and assumptions of the community of practice are the most powerful influences on individuals acting in a group context.

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